

Occupational Safety Competency 2.3

Competency 2.3 Occupational safety personnel shall demonstrate a familiarity level of knowledge with the following:

- 29 CFR 1910, Occupational Safety and Health Standards, Subpart Z - Toxic and Hazardous Substances (1910.1000 through 1910.1048)
- 29 CFR 1926, Safety and Health Regulations for Construction, Subpart Z - Toxic and Hazardous Substances
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for chemical substances and Physical Agents and Biological Exposure Indices (herein after referred to as the ACGIH TLV Booklet)

1. Supporting Knowledge and Skills

- a. Discuss the terminology necessary to interpret criteria presented in:
 - 29 CFR 1910, Subpart Z, Tables Z-1, Z-2, and Z-3
 - 29 CFR 1910, Subpart Z expanded health standards
 - The ACGIH TLV Booklet
- b. Discuss the respective applicability of overlapping or inconsistent requirements of 29 CFR 1910, Subpart Z, and the ACGIH TLV Booklet.
- c. Discuss the applicability of criteria for any of the toxic and hazardous substances listed in the above documents.
- d. Locate and identify applicable control measures for any of the toxic and hazardous substances listed in the above documents.
- e. Locate and identify emergency response measures for any of the toxic and hazardous substances listed in the above documents.

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2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	http://wastenot.inel.gov/cted/stdguido.html	DOE Standards, Guides, and Orders
OSHA	http://www.osha-slc.gov/	OSHA documents and search engine
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Scan 29 CFR 1910, Subpart Z, Tables Z-1, Z-2, and Z-3. **Read** 1910.1000.

EXERCISE 2.3-A What is the significance of a chemical which is preceded by a “C?”

EXERCISE 2.3-B Using 29 CFR 1910, Tables Z-1, 2, and 3, define ppm, mg/m³, and mppcf.

EXERCISE 2.3-C Using 29 CFR 1910, Table Z-2, what is the Acceptable Maximum Peak (above the acceptable ceiling concentration for an 8-hour shift) for hydrogen sulfide?

Read 29 CFR 1910, Appendix B, “References (Nonmandatory), (b) Hazardous Substances Information.”

Scan the *American Conference of Government Industrial Hygienists Threshold Limit Values (ACGIH TLVs)* Booklet.

EXERCISE 2.3-D Discuss the respective applicability of overlapping or inconsistent requirements of 29 CFR 1910, Subpart Z, and the ACGIH TLV Booklet.

Scan 29 CFR 1910.1010, “Benzidine.”

EXERCISE 2.3-E Using 29 CFR 1910.1010, “Benzidine,” locate the section that defines the application.

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EXERCISE 2.3-F Using 29 CFR 1910.1010, "Benzidine," locate the section that defines the control measures for benzidine.

EXERCISE 2.3-G Using 29 CFR 1910.1010, "Benzidine," locate the section that defines the emergency response measures.

3. Summary

Knowledge of the *Code of Federal Regulations* and the *Federal Register* and how to use them are important to both the operational (production) and environmental aspects of DOE facility activities. They contain listings of the legal requirements that could impact organizational and individual liability.

4. Exercise Solutions

EXERCISE 2.3-A What is the significance of a chemical which is preceded by a "C?"

ANSWER 2.3-A The "C" indicates the Ceiling Value, and the exposure limit that is preceded by a "C" shall at no time exceed the exposure limit given for that substance.

EXERCISE 2.3-B Using 29 CFR 1910, Tables Z-1, 2, and 3, define ppm, mg/m³, and mppcf.

ANSWER 2.3-B ppm = concentration in parts per million (of contaminated air), mg/m³ = milligrams per cubic meter, and mppcf = millions of particles per cubic foot (of air).

EXERCISE 2.3-C Using 29 CFR 1910, Table Z-2, what is the Acceptable Maximum Peak (above the acceptable ceiling concentration for an 8-hour shift) for hydrogen sulfide?

ANSWER 2.3-C 50 ppm for 10 minutes once, and only if no other measurable exposure occurs.

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- EXERCISE 2.3-D Discuss the respective applicability of overlapping or inconsistent requirements of 29 CFR 1910, Subpart Z, and the ACGIH TLV Booklet.
- ANSWER 2.3-D Requirements listed in the CFR are the legal requirements, whereas the requirements listed in the ACGIH TLV are the recommended maximums. While the CFR requirements set the minimum requirements, for safety of personnel, if the ACGIH requirements are lower, they should be followed.
- EXERCISE 2.3-E Using 29 CFR 1910.1010, "Benzidine," locate the section that defines the application.
- ANSWER 2.3-E (a) Scope and application, (1) This section applies to any areas in which Benzidine is manufactured, processed, repackaged, released, stored, or handled.
- EXERCISE 2.3-F Using 29 CFR 1910.1010, "Benzidine," locate the section that defines the control measures for benzidine.
- ANSWER 2.3-F Requirements for areas containing benzidine.
- EXERCISE 2.3-G Using 29 CFR 1910.1010, "Benzidine," locate the section that defines the emergency response measures.
- ANSWER 2.3-G (d) General regulated area requirements, (2) Emergencies.